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A survey of East Mediterranean *Dasumia* (Araneae, Dysderidae) with description of new species

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Abstract

Dasumia gasparoi **sp. n.** is described based on specimens of both sexes. The new species is compared with the similar *D. crassipalpis* (Simon, 1882), described from Syria; and with *D. mariandyna* Brignoli, 1979, the only previously known species of the genus recorded from Turkey. Furthermore, we point out that, due to some contradictions to the original description of the genus, *D. mariandyna* may necessarily belong to another genus. Detailed morphological descriptions, diagnosis and figures of the copulatory organs of the new species are presented.

Keywords

Harpacteinae, spider, Turkey

Introduction

Dasumia is a genus of the family Dysderidae and includes 13 previously described species (Platnick 2011). Ten are distributed in Europe, two in the Middle East and one in

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Turkey. *Dasumia* belongs in the subfamily Harpacteinae, and differs from other genera by the absence of ventral spines on the metatarsi and anterior tibiae; the posterior tarsi with either two claws or with an additional single tiny claw; by the typical arrangement of the cheliceral dentition and by having an abruptly curled embolus in males or more or less sclerotized posterior diverticulum of vulva in females (Thorell 1875; Dunin 1992; Deeleman-Reinhold 1993).

During our survey of the Turkish spider fauna, we encountered some interesting dysderid specimens in Kahramanmaraş province, a region that constitutes a transition zone between the Turkish Mediterranean region and the south-eastern region of Anatolia. Initially, examination of the sternum morphology suggested the specimens were members of the subfamily Harpacteinae. However, the structure of copulatory organs did not conform with the known species of *Harpactea* Bristowe, 1939 and *Stalagtia* Kratochvíl, 1970 from Turkey, nor did they show any similarity with those of *Dasumia mariandyna* Brignoli, 1979, which represented the only known *Dasumia* species recorded from Turkey. Kahramanmaraş is located close to Syria, so we then examined members of Harpacteinae known from Syria and the Middle East. This revealed similarities between our specimens and those of *Dasumia crassipalpis* from Syria, which had previously been described as *Harpactes crassipalpis* by Simon (1882) and later transferred to *Dasumia* by Alicata (1974), based on the structure of the previously unknown female genitalia.

The purpose of this study is to describe and illustrate a new species of *Dasumia* from Turkey and to discuss its placement in the genus together with the Syrian *D. crassipalpis* and the Turkish endemic *D. mariandyna*.

Materials and methods

All specimens were collected from Kahramanmaraş province of Turkey (Fig. 1). The specimens were collected from under stones using a hand aspirator. Digital images of the pedipalps and vulvae were taken with a Leica DFC295 digital camera attached to a Leica S8AP0 stereomicroscope, with 5–15 photographs taken in different focal planes and combined using image stacking software. Photographic images were edited using PHOTOSHOP CS2 and COREL-DRAW X3 was used to create the plates. All measurements are in mm. Terminology for the body measurements follows Chatzaki and Arnedo (2006). Terminology for the copulatory organs is adapted from Alicata (1974) and Deeleman-Reinhold (1993). On the male copulatory organ, additional apophyses developed on the structure called the "Apophysis$_a$" are named as "Apophysis$_{a1, a2}$, etc" relating to their sequential order relative to that of Apophysis$_{a1.}$ The following abbreviations are used in the text: **AL**, abdominal length; **CL**, carapace length; **CWmax**, maximum carapace width; **CWmin**, minimum carapace width; **AME**, anterior median eyes; **PLE**, posterior lateral eyes; **PME**, posterior median eyes; **AMEd**, diameter of anterior median eyes; **PLEd**, diameter of posterior lateral eyes; **PMEd**, diameter of posterior

Figure 1. Collecting localities of Turkish *Dasumia* species. ★ terra typica, *D. gasparoi* sp. n. ● *D. mariandyna*

median eyes; **ChF**, length of cheliceral fang; **ChG**, length of cheliceral groove; **ChL**, total length of chelicera (lateral external view); **Ta**, tarsus; **Me**, metatarsus, **Ti**, tibia; **Pa**, patella; **Fe**, femur; **Tr**, trochanter; **C**, coxa; **D**, dorsal; **pl**, prolateral; **rl**, retrolateral; **V**, ventral; **cKBK**, Personal collection of Kadir Boğaç Kunt, Ankara, Turkey; **AUZM**, Anadolu University, Zoology Museum, Eskişehir, Turkey; **SMF**, Senckenberg Museum, Frankfurt am Main, Germany.

Taxonomy

***Dasumia* Thorell, 1875**
In Thorell, 1875: 100, type species *Dasumia taeniifera* Thorell, 1875

***Dasumia gasparoi* sp. n.**
urn:lsid:zoobank.org:act:8E19F1DC-74BA-47D4-A505-6498414B4CCE
http://species-id.net/wiki/Dasumia_gasparoi

Material examined. Holotype. ♂ (AUZM), TURKEY, **Kahramanmaraş Province**, Pazarcık District, c. 5 km S of Narlı Town [37°19'11.78"N; 37°10'16.19"E], 07.03.2008, under stones, leg. E.A.Yağmur. **Paratypes:** 1 ♀ (AUZM); 1 ♀ (SMF), together with holotype.

Derivatio nominis. The new species is named in honour of the Italian geologist & arachnologist Dr. Fulvio Gasparo, who has made great contributions to the taxonomy of the family Dysderidae.

Diagnosis. *Dasumia gasparoi* sp. n. can be readily identified by the unique structure of male and female copulatory organs. It is most similar to *D. crassipalpis* from which it can be differentiated as follows:

1. In *D. gasparoi* sp. n. the transition zone between the tegulum and the distal appendages is more notable than in *D. crassipalpis*.

2. In *D. gasparoi* sp. n. the tip of the falciform embolus is sharper and taller and the embolus extends beyond $Apophysis_b$, whereas in *D. crassipalpis*, the embolus only reaches the middle of $Apophysis_b$.

3. $Apophysis_a$ and $Apophysis_b$ show explicit differences in structure between the two species.

4. In *D. gasparoi* sp. n. the spermatheca are relatively wider. Distal crest of spermatheca is shorter and thicker in *D. gasparoi* sp. n. than in *D. crassipalpis* (see Alicata 1974).

Measurements. (Holotype ♂ / Paratype n=2 ♀)**: AL** 3.50 / 4.47-4.50; **CL** 3.20 / 3.25-3.50; **CWmax** 2.50 / 2.75-2.80; **CWmin** 1.25 / 1.59-1.44 ; **AMEd** 0.16 / 0.17-0.18; **PLEd** 0.15 / 0.14-0.15; **PMEd** 0.11 / 0.14-0.12 ; **ChF** 0.58 / 0.66-0.66; **ChG** 0.47 / 0.52-0.53 ; **ChL** 1.37 / 1.60-1.62. Leg measurements are given in Table 1.

Description. Carapace dark brown anteriorly, yellowish brown posteriorly and blackish brown laterally. AME, PLE and PME in a circular arrangement. AME separated. PLE and PME clearly separated. Sternum, labium, gnathocoxae and chelicerae yellowish brown. Sternum blackish brown laterally (Figs 2 – 5). Cheliceral groove with two retromarginal and two promarginal teeth. Teeth on the promargin originate at the base of the groove and end in the middle. Retromarginal teeth originate in alignment with the point at which the promarginal teeth stop, and continue to the top of the cheliceral groove. Teeth on retromargin relatively smaller and more widely separated, when compared with those on the promargin (Figs 6, 7). Cheliceral groove long, top of the labium and gnathocoxae covered with short hairs. In males, joint of trochanter to gnathocoxa thicker and deeper (see Fig. 3). Abdomen greyish to light brown, with short, thin blackish hair over the entire surface. Females with a strongly developed linear postpedicelar and trapezoid epigastric scutum (Fig. 8). Males also have these structures, but they appear thinner and have less colour. Legs yellowish to light brown with sparse blackish setae. Periphery of articulation points dark brown.

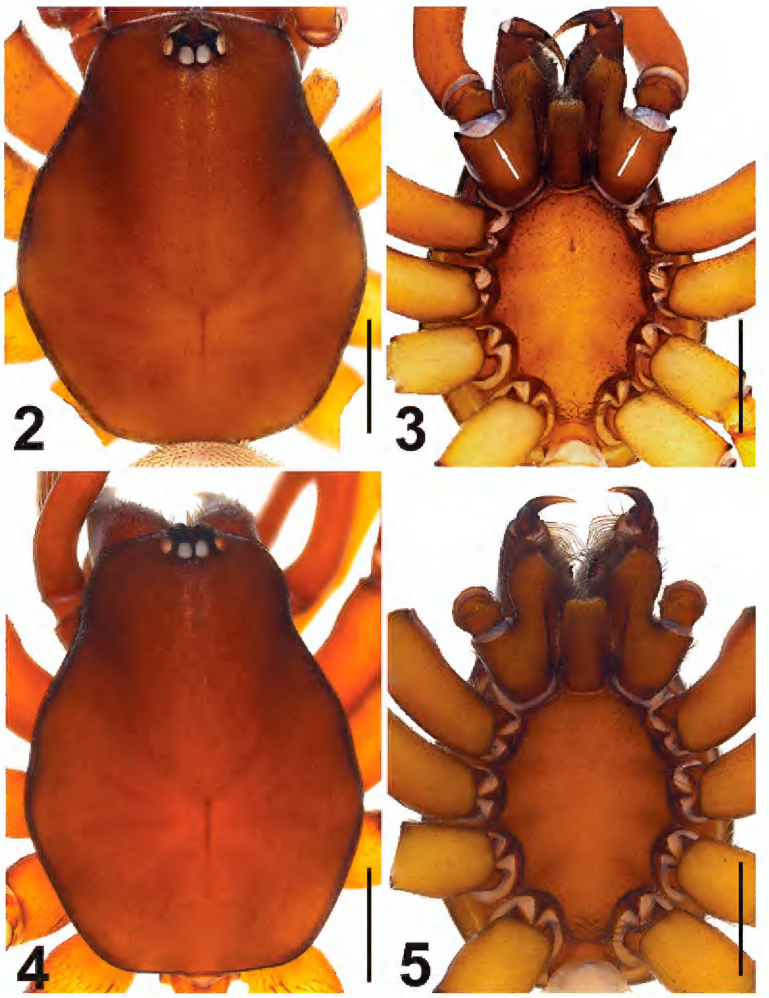
Leg IV > Leg I > Leg II > Leg III. Tarsi with three claws. Bent claws and middle claws are well developed (Figs 9, 10, 11, 12).

Tarsi III and IV with fine scopulae (Figs 9-12). Legs III and IV with fine metatarsal scopulae along the ventral surface, covering slightly less than the distal half of the segment. Dorsal part of coxae III and IV with 1-4 spines. Details of leg spination are given in Table 2.

In males, palpal tibia almost double the size of the tarsus. Tarsus bullet-shaped in lateral view. Tegulum yellowish brown; approximately as long as wide, and with a spherical shape. Between the distal appendages and tegulum, there is a visible transition region, peripherally sclerotized in places (Figs 13, 14). Tip of embolus adjacent to $Apophysis_b$ (Figs 13, 15). Embolic base wide and triangular. Embolus falciform, tapering distally, blackish and well sclerotized along its length (Figs 15, 16). $Apophysis_a$ triangular, sepa-

Table 1. Leg measurements of *Dasumia gasparoi* sp. n.

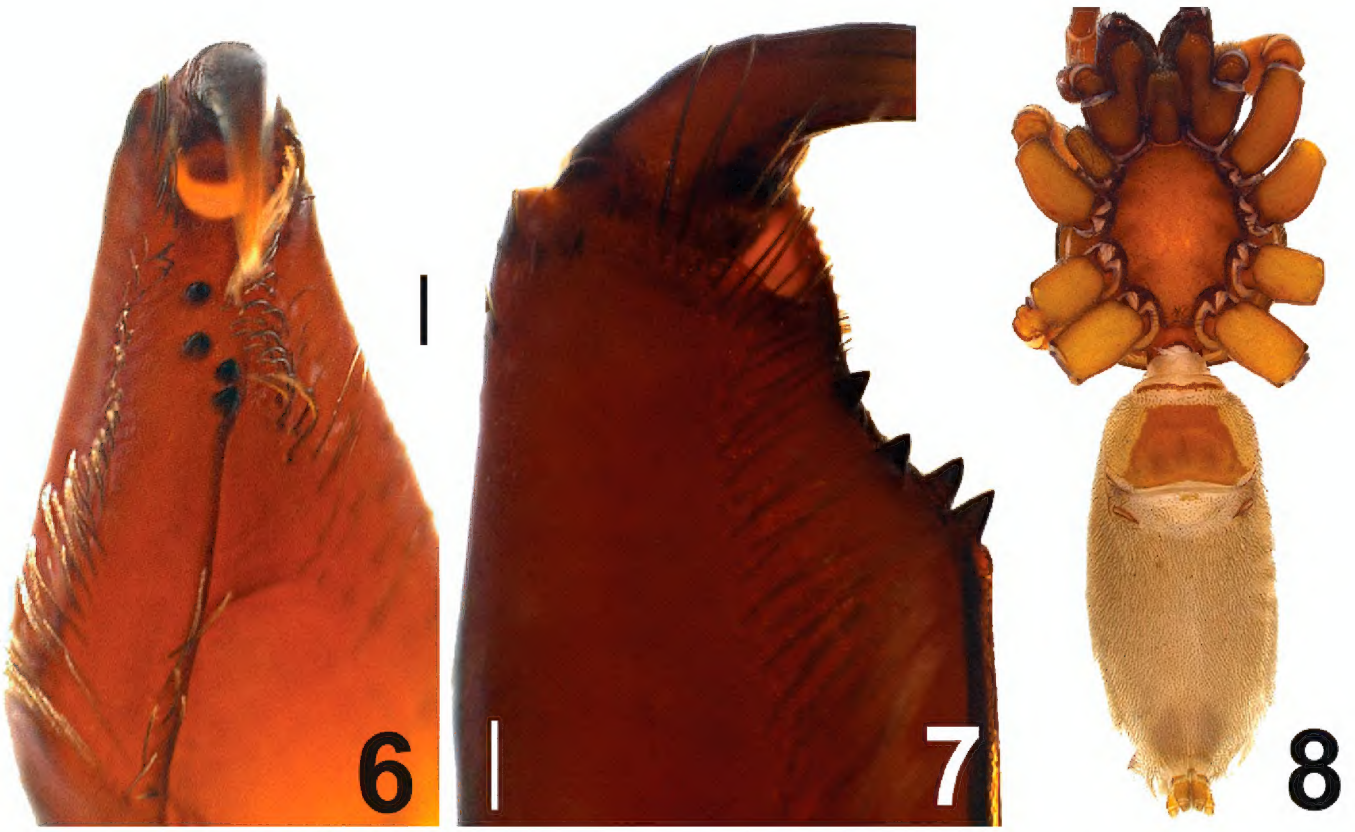
(Holotype ♂ / Paratype ♀)	Fe	Pa	Ti	Me	Ta
Leg I	3.00 / 3.08	1.80 / 1.88	2.76 / 2.60	2.68 / 2.48	0.63 / 0.48
Leg II	2.50 / 2.56	1.60 / 1.68	2.40 / 2.24	2.60 / 2.50	0.63 / 0.60
Leg III	2.10 / 2.16	1.05 / 1.12	1.75 / 1.68	2.05 / 2.04	0.55 / 0.44
Leg IV	2.96 / 3.00	1.40 / 1.60	2.50 / 2.56	2.64 / 3.20	0.63 / 0.64



Figures 2–5. *Dasumia gasparoi* sp. n. **2**, **3** (♂) carapace, sternum **4**, **5** (♀) ditto. Scale lines: 0.25 mm.

Table 2. Leg spination of *Dasumia gasparoi* sp. n.

♂ (Holotype)	Leg I	Leg II	Leg III	Leg IV
C	0	0	2 pl	3 pl 1 D
Tr	0	0	0	0
Fe	4 pl	5 pl	3 D 4 rl	9 D
Pa	0	0	2 D 1 rl	0
Ti	0	0	2 pl 1 D 4 rl 5 V	4 pl 4 rl 5 V
Me	0	0	3 pl 6 rl 2 V	4 pl 1 D 5 rl 6 V
♀ (Paratype)				
C	0	0	1 pl	2 pl
Tr	0	0	1 rl	1 rl
Fe	2 pl	1 pl	3 D 3 rl	8 D
Pa	0	0	2 D 1 rl	0
Ti	0	0	2 pl 1 D 3 rl 2 V	4 pl 1 D 3 rl 5 V
Me	0	0	4 pl 6 rl 2 V	4 pl 4 rl 5 V

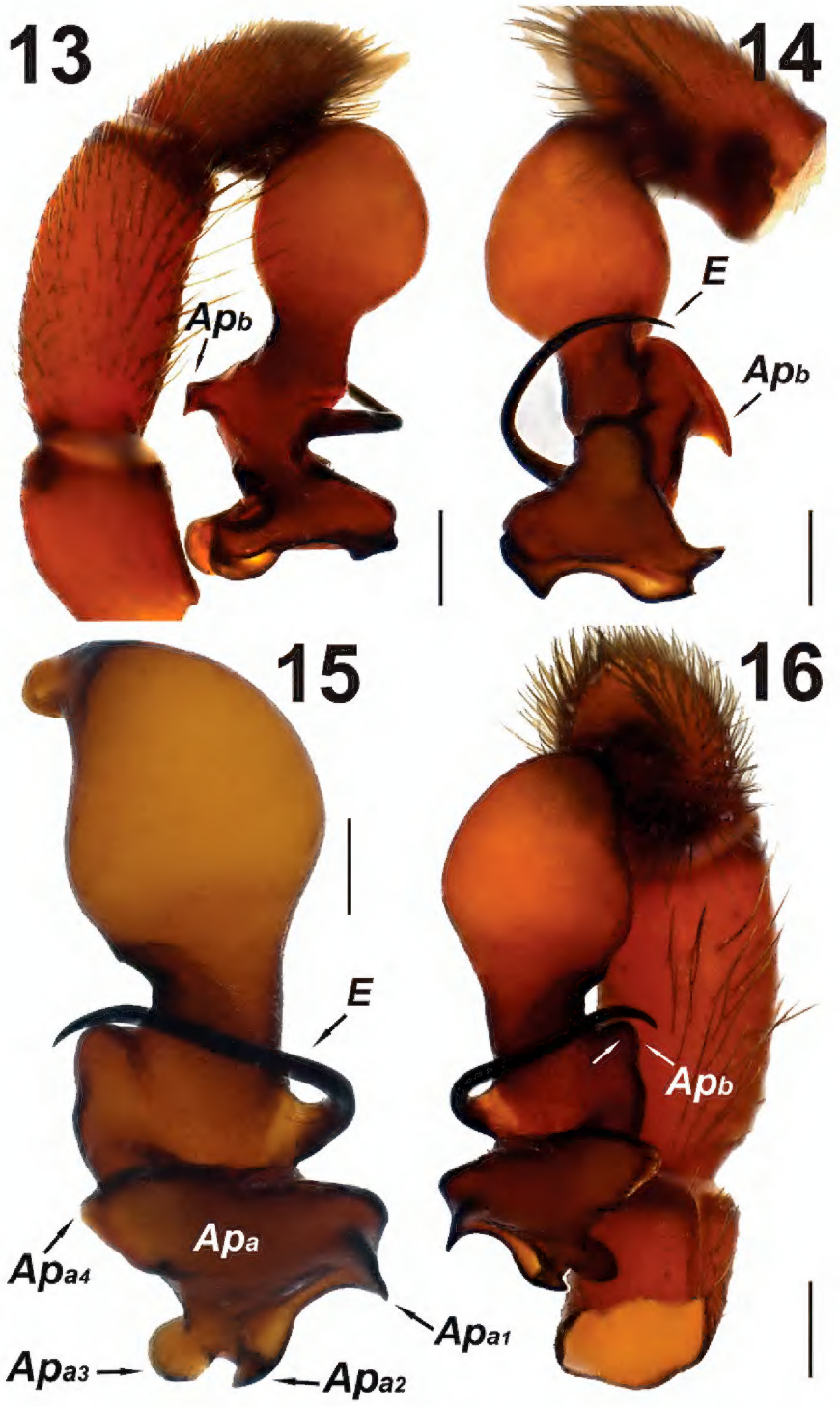


Figures 6–8. *Dasumia gasparoi* sp. n. **6, 7** cheliceral teeth **8** female, ventral view Scale line: (6, 7) 0.1 mm.

Figures 9–12. Leg tarsi of *Dasumia gasparoi* sp. n. **9** Leg I **10** Leg II **11** Leg 3 **12** Leg IV Scale line: 0.25 mm.

rated from embolus and Apophysis$_b$ (Fig. 13). Details of palp in ventral view: Apophysis$_{a1}$ short and sharp, beak-shaped at the right corner; Apophysis$_{a2}$ semicircular at the left corner; Apophysis$_{a3}$ (which is stubbier than apophyses$_{a1}$ and Apophysis$_{a4}$) ear-shaped at the rear corner. All of these apophyses with well sclerotized margins (Fig. 15).

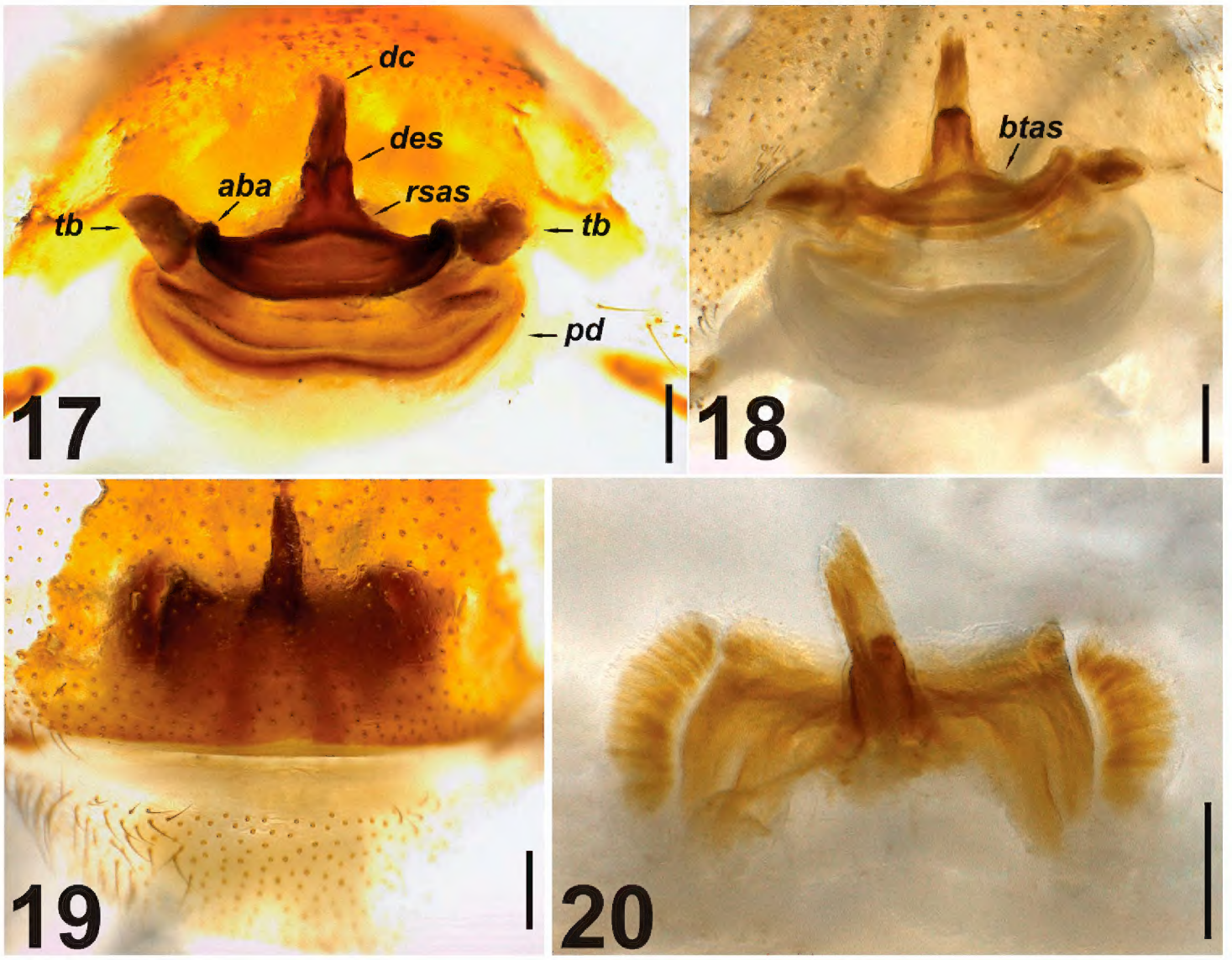
Vulva generally well sclerotized. Distal crest medium-sized and butt-ended. Distal expansion of the spermatheca wider than distal crest and visually hump-shaped. Rod-



Figures 13–16. Male palp of *Dasumia gasparoi* sp. n. Abbreviations: Ap_a Apophysis$_a$ Ap_b Apophysis$_b$ ***E*** embolus. Scale lines: 0.25 mm.

shaped part of the anterior spermatheca short and broader towards the base. Basal transverse part of the anterior spermatheca appears merged with the anterior basal arc. Both structures well sclerotized from centre to periphery. In dorsal view, anterior basal arc arc-shaped; basal transverse part of the anterior spermatheca forming a downward chevron shape. Transverse bar longer than the anterior basal arc. The surface area of the posterior spermatheca is wider than the anterior spermatheca. Transverse bar ends with one snake head-shaped structure at either side; and in contact with posterior diverticulum over complex membranous channel network (Figs 17, 18, 19).

Note. In ventral view, and looking at an angle of 70° from the surface to the vulva, we observed symmetrically located, reniform structures consisting of helicoidal canals inside both sides of the vulva (Fig. 20). The origin and function of these structures is unknown.



Figures 17–20. Vulva of *Dasumia gasparoi* sp. n. **17, 18** dorsal view **19, 20** ventral view. Abbreviations: ***aba*** anterior basal arc ***btas*** basal transverse part of the anterior spermatheca ***dc*** distal crest ***des*** distal expansion of the spermatheca ***pd*** posterior diverticulum ***rsas*** rod-shaped part of the anterior spermatheca ***tb*** transverse bar. Scale lines: 0.5 mm.

Ecology. Samples were collected during early spring from under stones (using a hand aspirator) in steppe habitat with scrubs of *Quercus coccifera* and with pine woods located close by. The collection locality was on low land at the middle of a mountainous region, which may enhance the probability of this species being an endemic.

***Dasumia crassipalpis* (Simon, 1882)**
http://species-id.net/wiki/Dasumia_crassipalpis

Harpactes c.: Simon, 1882: 224, f. 7-8 (D ♂).
Harpactocrates c.: Reimoser, 1919: 11.
D. c.: Alicata, 1974: 40, f. 1-4 (T ♂ from *Harpactocrates*, D ♀).

Material examined. 1 ♂ (AUZM), **ISRAEL**, Mount Meron, 17.XII.2010, leg. C. Drees

Detailed comparison of *D. gasparoi* sp. n. and *D. crassipalpis*. Unfortunately, due to lack of material, we were unable to compare females of the two species. Here we

Table 3. Leg measurements of *Dasumia crassipalpis*

♂	Fe	Pa	Ti	Me	Ta
Leg I	2.67	1.85	2.65	2.57	0.64
Leg II	2.69	1.66	2.54	2.49	0.62
Leg III	2.20	1.16	1.75	2.24	0.57
Leg IV	3.12	1.49	2.60	3.06	0.58

Table 4. Leg spination of *Dasumia crassipalpis*

♂	Leg I	Leg II	Leg III	Leg IV
C	0	0	1 pl 1 D	7 pl 2 D
Tr	0	0	0	1 rl
Fe	4 pl	1 pl	3 D 3rl	9 D
Pa	0	0	2 D 1 rl	1 D
Ti	0	0	2 pl 1 D 3 rl 5 V	4 pl 1 D 3 rl 5 V
Me	0	0	3 pl 6 rl 2 V	5 pl 5 rl 5 V

comment on general similarities and differences observed from comparison of male specimens from both species; and from the description of female *D. crassipalpis* given by Alicata (1974) with the female of *D. gasparoi* sp. n., as follows:

Body coloration and general appearance similar in both species.

Arrangement of cheliceral teeth on cheliceral groove similar, but in *D. crassipalpis,* distance between teeth on promargin and retromargin relatively wider.

In the original description of *D. crassipalpis,* carapace width for males was given as 3.2 mm (see Simon 1882, page 224). Our *D. crassipalpis* specimen from Israel has a carapace width of 3.26 mm. Based on the body measurements of *D. gasparoi* sp. n., there are no significant differences between the two species. However, the legs of *D. crassipalpis* from Israel are relatively shorter than *D. gasparoi* sp. n. (see Table 3).

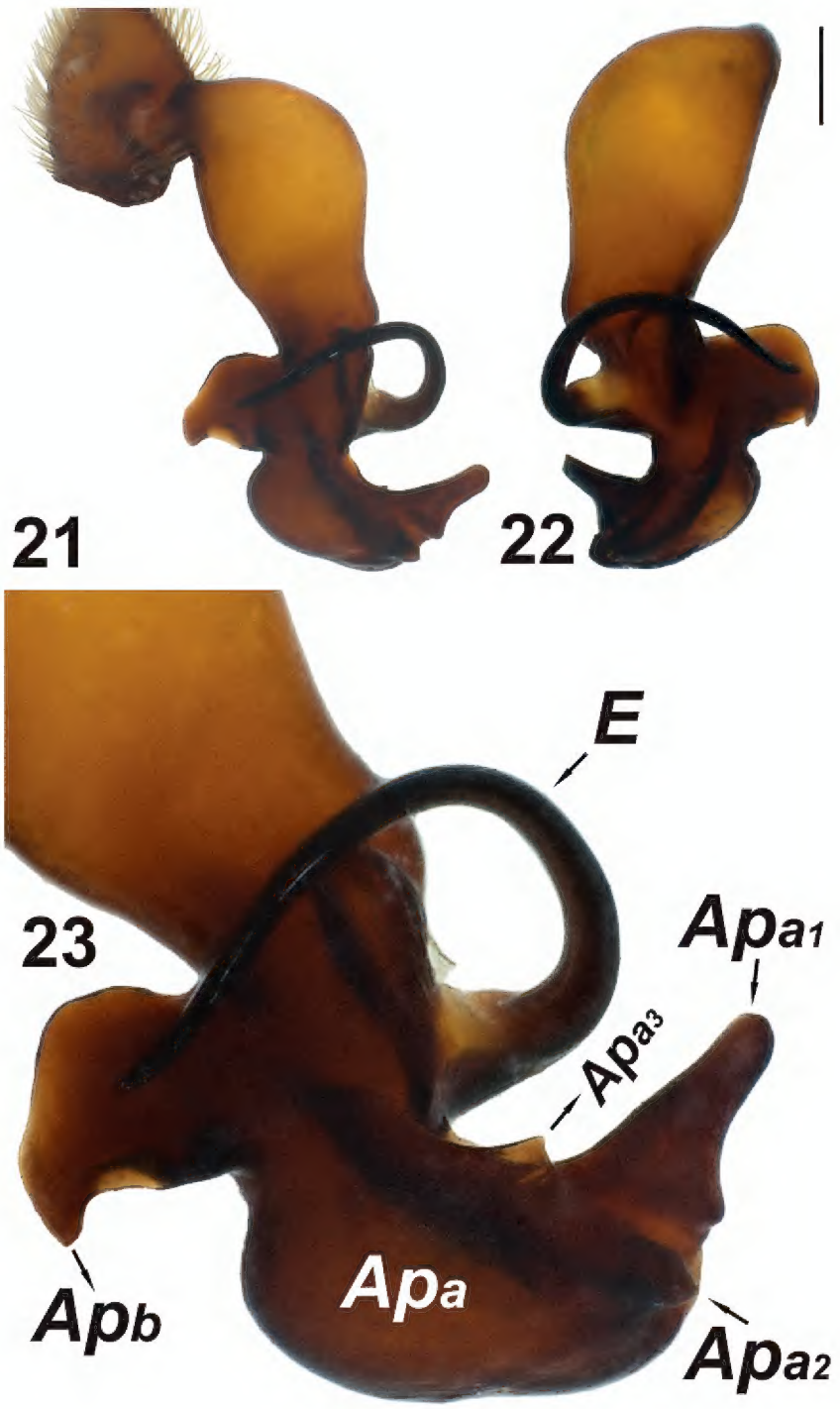
Leg spination similar in both species. Legs III and IV of female *D. gasparoi* sp. n. and leg IV of male *D. crassipalpis* exhibit trochanteric retrolateral spines, which is an interesting observation (see Table 2 and 4).

Linear postpedicelar and trapezoid epigastric scutum present in males of both species, in *D. gasparoi* sp. n. pale; in *D. crassipalpis* even paler.

In *D. crassipalpis*, morphology of the distal appendages distinctive on male palp. Apophysis$_{b}$ longer and wider. Also, in *D. gasparoi* sp. n., Apophysis$_{a1}$ shorter and projecting downwards; while in *D. crassipalpis* it is well developed, apparent and projected upwards. In *D. crassipalpis* palp when viewed ventrally, except for Apophysis$_{a1}$, the remaining apophyses are located at the right corner of Apophysis$_{a}$, close to Apophysis$_{a1}$ (Figs 21, 22, 23).

Even though there are structural differences apparent, the vulvae of both species are similar and generally well sclerotized (see Alicata 1974).

A short assessment on the distribution of *Dasumia crassipalpis*. First described as *Harpactes crassipalpis* by Simon (1882) on the basis of male specimens collected from



Figures 21–23. Male palp of *Dasumia crassipalpis*. Abbreviations: Ap_a Apophysis$_a$ Ap_b Apophysis$_b$ ***E*** embolus. Scale line (21, 22): 0.25 mm.

Syria, females were subsequently described by Alicata (1974); and based on the previously unknown female genitalia, the species was transferred to the genus *Dasumia.* Simon reported the terra typica of *D. crassipalpis* as "Syria", without giving any further detail (see Simon 1882). Moreover, Syria was the land of the Ottoman Empire in those days, and some provinces today known as Turkish were included with the rest of the region then known as Syria. For this reason, it is hard to draw a northern border line for the distribution of the species. However, considering that the only male specimen examined for the purpose of this study was collected in Israel, it may be assumed that *D. crassipalpis* is distributed along the line of Syria, Lebanon and Israel. Although we have not yet collected this species during our extensive arachnological field studies at the Turkey-Syria border, it is possible that this species reaches Turkey at the north and Jordan at the south of its range.

Figures 24–25. *Dasumia mariandyna* (topotype). **24** male palp **25** cheliceral teeth. Scale line: (24) 0.25 mm.

Dasumia mariandyna Brignoli, 1979

http://species-id.net/wiki/Dasumia_mariandyna

D. m.: Brignoli, 1979: 312, f. 9-11 (D ♂♀).
D. m.: Le Peru, 2011: 222, f. 240 (♂♀).

Material examined. 1 ♂ (AUZM) **TURKEY**, **Düzce Province**, Akçakoca District, c. 1 km south of Kepenç Village [41° 4'11.89"N; 31° 7'9.06"E], 22.V.2008, under leaf litter, leg. K.B. Kunt; 1 ♂ (AUZM), **Bolu Province**, Abant [40°40'39.36"N; 31°28'18.78"E], 13.IX.2009, under leaf litter, leg. K.B. Kunt.

Comparison of *D. gasparoi sp. n.* and *D. mariandyna*. Brignoli defined the relation of *D. mariandyna* to other species of the genus as follows: "The new species is not related to the Greek and Near Eastern species; it can be easily distinguished from all known species by the genitalia" (see Brignoli 1979, page 313). Indeed, *D. mariandyna* can be easily distinguished by the copulatory organs from the Middle Eastern representative of the genus, *D. crassipalpis* and from *D. gasparoi* sp. n. which is very close to *D. crassipalpis*. Another very important issue is that the arrangement of cheliceral teeth in *D. mariandyna* clearly does not conform with the characteristic arrangement of cheliceral teeth in this genus. Nevertheless, *D. mariandyna* just like *D. gasparoi* sp. n. and *D. crassipalpis*, also possesses 3 claws on tarsi III and IV. In accordance with the data mentioned above and by considering embolus/bulbus proportion of the species, the place of *D. mariandyna* in the subfamily Harpacteinae should be rediscussed, for it is possible that *D. mariandyna* may belong to another genus.

Results and discussion

With the description of *D. gasparoi* sp. n., the total number of *Dasumia* species is now 14 and the total number of dysderid spiders known from Turkey is raised to 47. Even if we ignore *D. sancticedri* Brignoli, 1978 (described in the genus *Dasumia* and associated with *D. crassipalpis* by Brignoli) which has a suspiciously different palpal structure questioning its correct placement in the genus *Dasumia* (see Brignoli, 1978, page 173. figures 1, 2); it is not unreasonable to think that spiders exist in the Eastern Mediterranean basin includes similar but different species which are slightly different from the European taxa in the structure of copulatory organs. The relationships between the European and Eastern Mediterranean representatives of the genus will be clarified following future revisions and with studies including molecular systematics.

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